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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,869	08/04/2003	Rick K. Dodge	ITO.0050US (P16247)	5264
7590 09/12/2005			EXAMINER	
Timothy N. Trop TROP, PRUNER & HU, P.C. STE 100 8554 KATY FWY HOUSTON, TX 77024-1841			DANG, PHUC T	
			ART UNIT	PAPER NUMBER
			2818	
DATE MAILED: 09/12/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/633,869

Applicant(s)

DODGE, RICK K.

Examiner

PHUC T DANG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on amendment filed March 25, 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11, 17 and 23 is/are rejected.
- 7) ☒ Claim(s) 1-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### **Response to Arguments**

1. Applicant's argument filed on July 1, 2005 with respect to claims 1-30 have been considered but are moot in view of the new ground(s) of rejection.

### **Claim Objections**

2. Claims 1-30 are objected to because of the following reasons:

In claim 1, line 3, a term "... the breakdown ..." should replace by --... a breakdown ...--.

In claim 2, line 4, a term "an aperature" should replace by -- an aperture --.

In claim 4, line 1, a term "a lower conductive" should replace by -- the lower conductive --.

In claim 11, line 3, insert "a" before -- breakdown --.

In claim 20, line 6, insert "a" before -- breakdown --.

In claim 23, line 3, insert "a" before -- breakdown --.

In claim 26, line 4, insert "a" before -- breakdown --.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 11, 17 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chazono et al., hereinafter "Chazono" (U.S. Patent No. 6,614,644 B2).

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Regarding claim 11, Chazono discloses a multilayer ceramic capacitor includes a breakdown layer (46, Fig. 4) between a pair of electrodes (48, Fig. 4), the breakdown layer (46, Fig. 4) being occurred by the electric field intensity per unit thickness increases.

Chazono discloses all the features of the claimed invention as discussed above, but does not disclose the breakdown layer being ion implanted to increase the likelihood that breakdown will occur in one region rather than another region of the breakdown layer.

The breakdown layer being ion implanted to increase the likelihood that breakdown will occur in one region rather than another region of the breakdown layer is considered to be obvious in a design of choice, since the breakdown can be occurred by applied the high voltage in the breakdown layer.

Chazono however, discloses the dielectric breakdown can occur between the electrodes by applying the electric field intensity per unit thickness increases [col. 1, lines 56-63].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to modify the above discussed teaching of Chazono by ion implantation in the breakdown layer for a purpose of controlling the breakdown voltage.

Regarding claim 17, Chazono discloses the breakdown layer is formed of an insulator [col. 1, line 25].

Regarding the method claim 23, the method claim 23 is rejected similar to claim 11 above including damaging the one region and not damaging the other region because the electric field intensity is varied depending on the thickness of the capacitor.

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**Allowable Subject Matter**

4. Claims 1-10, 20-22 and 26-30 would be allowed.

The following is a statement of reason for the indication of allowable subject matter:

Claims 1-10, 20-22 and 26-30 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest the claimed invention having a step of forming a phase change memory pore including a breakdown layer in the pore and increasing the likelihood that a breakdown will occur in one region of the breakdown layer in the pore rather than another region of the breakdown layer in the pore as cited in claim 1 and a system comprising a semiconductor memory coupled to the device, the memory including a pair of electrodes, a breakdown layer between the pair of electrodes, the breakdown layer being ion implanted to increase the likelihood that a breakdown will occur in one region rather than another region of the layer as cited in claim 20 and a memory comprising a breakdown layer between a pair of electrodes, the breakdown layer having a central region and a peripheral region between said electrodes, one of the central and the peripheral regions being damaged such that a breakdown is more likely to occur in one of the regions than the other of said regions as cited in claim 26.

Claims 12-16, 18-19 and 24-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

None of the prior art made of record does not disclose the memory is a phase change memory including a phase change material between the electrodes as cited in claim 12 and the

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insulator includes nitride as cited in claim 18 and a central portion of the layer is ion implanted and a peripheral region of the breakdown layer is not ion implanted as cited in claim 19 and a step of forming a phase change material between the electrodes as cited in claim 24 and including ion implanting the breakdown layer as cited in claim 25.

Claims 13-16 are depend directly or indirectly on claim 12, then, they also would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

Claim 1-10, 20-22 and 26-30 would be allowable if rewritten or amended to overcome the objections set forth in this Office action.

### **Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

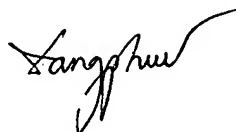
6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and After Final communications.

7. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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Phuc T. Dang

PD

A handwritten signature in black ink, appearing to read "Phuc T. Dang", written in a cursive style.

Primary Examiner

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